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MUNI METRO TURNAROUND PROJECT

ENVIRONMENTAL IMPACT STATEMENT

SF Municipal Railway

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INFORMATION PACKET

FOR THE

SCOPING MEETING

ESDAY
PTEMBER 22, 1987
00 P.M.

THE FERRY BUILDING
PORT OF SAN FRANCISCO
PORT COMMISSION HEARING ROOM
ROOM NO. 3100
THE EMBARCADERO AT MARKET STREET
SAN FRANCISCO, CALIFORNIA

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REFERENCE BOOK

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NOTICE OF INTENT TO PREPARE AN ENVIRONMENTAL IMPACT STATEMENT FOR PROPOSED SAN FRANCISCO MUNICIPAL RAILWAY (MUNI) METRO TURNAROUND PROJECT.

SUMMARY. Pursuant to the National Environmental Policy Act (42 U.S.C. 4321) and the Council on Environmental Quality's implementing regulations (40 CFR Part 1500), the Urban Mass Transportation Administration (UMTA) gives notice that an Environmental Impact Statement is being prepared for the proposed San Francisco Municipal Railway (MUNI) Metro Turnaround Project in downtown San Francisco, California. The MUNI, an operational branch of the City and County of San Francisco's Public Utilities Commission (PUC), proposes to construct a turnaround facility for the Market Street subway with UMTA Federal capital grant assistance and local funding. The proposed action would provide a more efficient and flexible track configuration beyond the downtown terminus of the existing MUNI Metro subway.

FOR FURTHER INFORMATION CONTACT: Ms. Carmen C. Clark, UMTA Regional IX, 211 Main Street, Suite 1160, San Francisco, California 94105; telephone (415) 974-7317 or Mr. Everett M. Hintze, Utilities Engineering Bureau, San Francisco PUC, 1155 Market Street, San Francisco, California 94103; telephone (415) 554-0706.

Project Description/Objectives. The existing stub end track arrangement at the San Francisco Municipal Railway Metro level of the Embarcadero Station constrains the Metro from meeting its existing and future headways during peak hours. The MUNI Metro Turnaround Project is designed to construct a turnaround facility for the Market Street subway to provide a more efficient turnaround arrangement. This will allow MUNI to:

Provide additional capacity to accommodate the growth in ridership on the existing Metro System as forecast by the City in the year 2007.

Provide the opportunity to reduce coupling of trains at West Portal and Duboce Portal, thus reducing passenger delays and operating expenses.

Improve operating reliability by nominal cost changes to the vehicles and signal system.

Provide side tracks to turnback a significant portion of the trains off the mainline tracks thus allowing for a future Metro extension to the south.

While the proposed action would allow for a future southerly extension of the MUNI Metro System, such extension is not being considered as part of this proposed action.

Alternatives. A previous scoping meeting was held on March 5, 1986 to consider four all-underground alternatives based on the City's preliminary operating requirements. Studies since then have finalized these requirements and have allowed the development of simpler and less costly alternatives including the location of the turnaround on the surface.

A range of alternatives will be considered and evaluated in the EIS:

No action alternative.

A transportation system management alternative consisting of operational improvements to existing infrastructure.

Surface turnaround facility in the median of the realigned Embarcadero Parkway.

Underground turnaround facility beneath the Embarcadero.

Probable Effect. Construction of both the surface and underground alternatives would involve tunneling under lower Market Street and Justin Herman Plaza to minimize surface impacts. The surface alternative would use open cut construction from the south side of the Plaza to Howard Street and surface construction in the median of the realigned Embarcadero from Howard to Bryant Streets. The construction of the underground alternative involves open cut construction from the south side of the Plaza to Howard Street with a short tail track on the surface south of Folsom Street. Construction impacts would include noise and vibration, traffic and pedestrian disruption, interruption of access to the businesses and parking areas, potential for movements of BART tunnels, potential for settling of some adjacent buildings, and potential disturbance of buried archaeological resources that could be in the area. Construction of the surface facility along the Embarcadero would also include potential impacts to the Embarcadero freeway structures and existing buildings within the proposed alignment, and facility operations could have long term effects of circulation disruptions and increased noise. Beneficial impacts resulting from improved transit service will occur.

Several other transportation projects are planned within, or adjacent to, the project area. While the proposed MUNI Metro extension to the CALTRAIN Station at Fourth and Townsend Streets is considered a secondary impact, other related projects such as the Embarcadero Parkway Project from King Street to North Point Street, the proposed MUNI F-Line extension northward to Fisherman's Wharf, and construction of new on and off ramps to the I-280 freeway, while not dependent on the turnaround project will be implemented within the same time frame and therefore the cumulative effects of these projects will be addressed.

Scoping. A scoping meeting is scheduled for September 22, 1987 at 7 p.m., Port Commission Hearing Room 3100, Ferry Building, Embarcadero at Market Street. An information packet which gives more detail on the project and expected impacts is available to the public at the Utilities Engineering Bureau, San Francisco Public Utilities Commission, 1155 Market Street. Written comments germane to the scope of the EIS will be accepted by UMTA for a period of thirty (30) days from the date of this advertisement. Commentors may comment on the alternatives to be considered or propose additional social, economic, or environmental impacts to be evaluated. Commentators proposing additional impacts to be evaluated should indicate which alternatives are expected to generate these impacts and give specific reasons why the impacts may be significant. Comments may be sent to UMTA or San Francisco PUC at the informational addresses given above.

N62126—Sept. 13, 16, 18

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SECTION 1 - INTRODUCTION

The Urban Mass Transportation Administration (UMTA) has scheduled this public scoping meeting to acquaint you with an ongoing project to provide proposed turnaround facilities for the San Francisco Municipal Railway at the lower end of Market Street and under Steuart Street (see attached Site Map). Improved alternatives will be presented at this meeting compared with the previous scoping meeting held March 5, 1986. This meeting will give you an opportunity to present your comments for consideration and possible incorporation in the draft Environmental Impact Statement (EIS). This meeting is part of the EIS scoping process which is intended to determine the scope and the significant issues to be analyzed in depth in the EIS, as required by the National Environmental Policy Act. Comments received tonight or written comments received by October 22, 1987 will be included in the EIS scoping record. Written comments and questions regarding this Environmental Impact Statement should be sent to:

Mr. Everett M. Hintze
Project Manager, Utilities Engineering Bureau
San Francisco Public Utilities Commission
1155 Market Street
San Francisco, CA 94103
(415) 554-0706

or

Ms. Carmen Clark
Urban Mass Transportation Administration
211 Main Street, Suite 1160
San Francisco, CA 94105
(415) 974-7543

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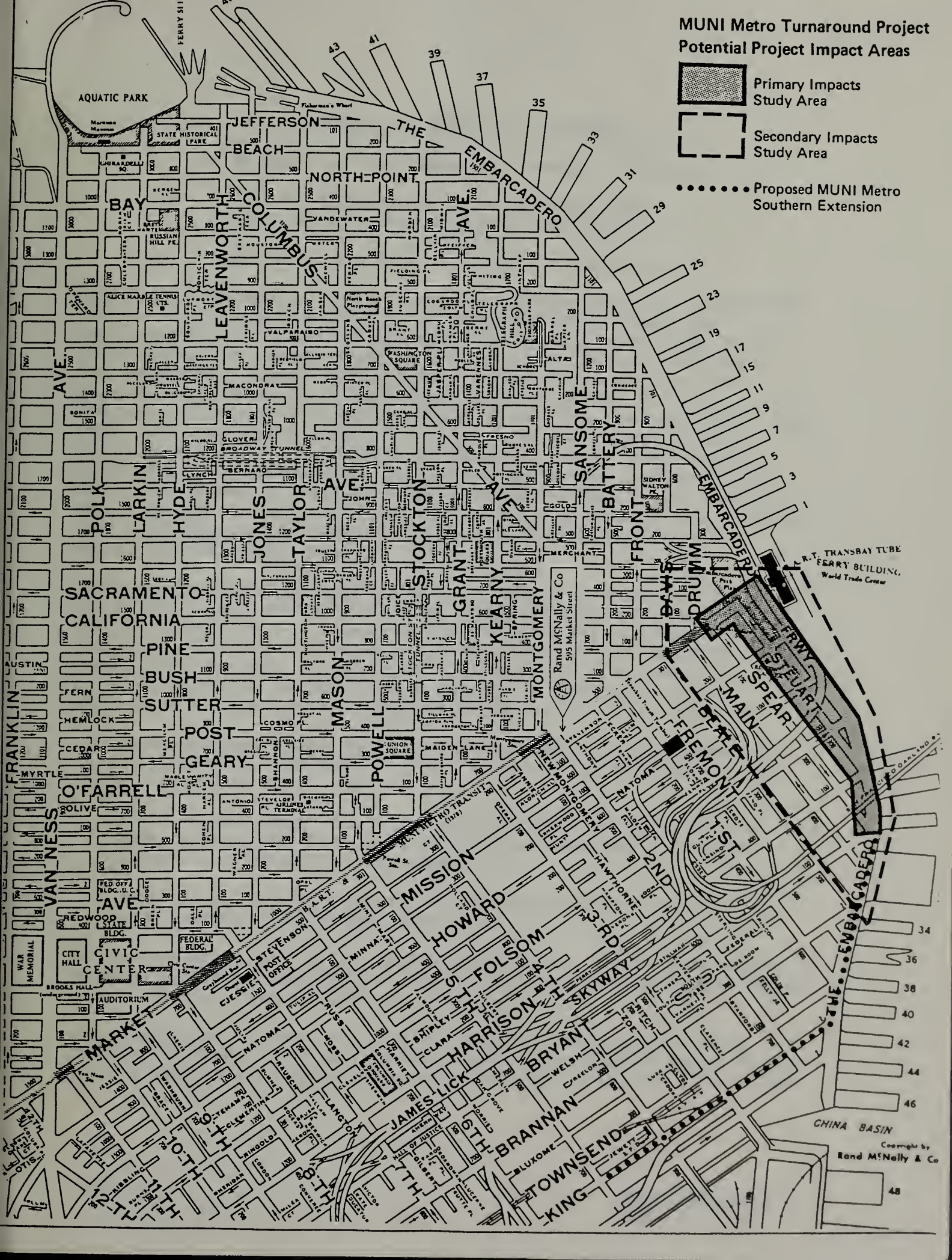
MUNI Metro Turnaround Project
Potential Project Impact Areas
Primary Impacts Study Area
Secondary Impacts Study Area
Proposed MUNI Metro Southern Extension
AQUATIC PARK
JEFFERSON
BEACH
NORTH POINT
THE EMBARCADERO
BAY
LEAVENWORTH
COLUMBUS
AVE.
POLK
LARKIN
HYDE
JONES
TAYLOR
STOCKTON
GRANT
KEARNY
MONTGOMERY
SANSOME
BATTERY
FRONT
DRUMM
MAIN
BEALE
FREMONT
1ST
2ND
3RD
SPEAR
STEUART
FRWY
SACRAMENTO
CALIFORNIA
PINE
BUSH
SUTTER
POST
GEARY
O'FARRELL
MASON
POWELL
FRANKLIN
VAN NESS
MISSION
HOWARD
FOLSOM
HARRISON
BRYANT
BRANNAN
TOWNSEND
KING
MARKET
CIVIC CENTER
CITY HALL
AUDITORIUM
WAR MEMORIAL
FEDERAL BLDG.
STEVENSON POST OFFICE
SKYWAY
JAMES LICK
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7TH
8TH
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SECTION 2 - NOTICE OF INTENT

to Prepare an Environmental Impact Statement

U.S. DEPARTMENT OF TRANSPORTATION
Urban Mass Transportation Administration
and the
San Francisco Public Utilities Commission

SUMMARY Pursuant to the National Environmental Policy Act (42 U.S.C. 4321) and the Council on Environmental Quality's implementing regulations (40 CFR Part 1500), the Urban Mass Transportation Administration (UMTA) gives notice that an Environmental Impact Statement is being prepared for the proposed San Francisco Municipal Railway (MUNI) Metro Turnaround Project in downtown San Francisco, California. The MUNI, an operational branch of the City and County of San Francisco's Public Utilities Commission (PUC), proposes to construct a turnaround facility for the Market Street subway with UMTA Federal capital grant assistance and local funding. The proposed action would provide a more efficient and flexible track configuration beyond the downtown terminus of the existing MUNI Metro subway.

Project Description/Objectives The existing stub and track arrangement at the San Francisco Municipal Railway Metro level of the Embarcadero Station constrains the Metro from meeting existing and future headways during peak hours. The MUNI Metro Turnaround Project is designed to construct a turnaround facility for the Market Street subway to provide a more efficient turnaround arrangement. This will allow MUNI to:

Provide additional capacity to accommodate the growth in ridership on the existing Metro System as forecast by the City in the year 2007.

Provide the opportunity to reduce coupling of trains at West Portal and Duboce Portal, thus reducing passenger delays and operating expenses.

Improve operating reliability by nominal cost changes to the vehicles and signal system.

While the proposed action would allow for a future southerly extension of the MUNI Metro System, such extension is not being considered as part of this proposed action.

Alternatives A previous scoping meeting was held on March 5, 1986 to consider four all-underground alternatives based on the City's preliminary operating requirements. Studies since then

have finalized these requirements and have allowed the development of simpler and less costly alternatives including the location of the turnaround on the surface.

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Several other transportation projects are planned within, or adjacent to, the project area. While the proposed MUNI Metro extension to the CALTRAIN Station at Fourth and Townsend Streets is considered a secondary impact, other related projects such as the Embarcadero Parkway Project from King Street to North Point Street, the proposed MUNI F-Line extension northward to Fisherman's Wharf, and construction of new on and off ramps to the I-280 freeway, while not dependent on the turnaround project will be implemented within the same time frame and therefore the cumulative effects of these projects will be addressed.

Scoping A scoping meeting is scheduled for September 22, 1987 at 7 p.m., Port Commission Hearing Room 3100, Ferry Building, Embarcadero at Market Street. An information packet which gives more detail on the project and expected impacts is available to the public at the Utilities Engineering Bureau, San Francisco Public Utilities Commission, 1155 Market Street. Written comments germane to the scope of the EIS will be accepted by UMTA for a period of thirty (30) days from the date of this notice. Commentors may comment on the alternatives to be considered or propose additional social, economic, or environmental impacts to be evaluated. Commentors proposing additional impacts to be evaluated should indicate which alternatives are expected to generate these impacts and give specific reasons why the impacts may be significant. Comments may be sent to UMTA or San Francisco PUC at the informational addresses given above.

SECTION 3 - BACKGROUND

The Muni Metro, as the system is known, consists of five surface lines in the outer neighborhoods that converge in a subway in downtown San Francisco. It currently carries 125,000 to 140,000 passengers per day.

Currently, the lack of an efficient turnaround facility near The Embarcadero Station limits the capacity of the Metro System.

Prior to the start of Metro operations in 1979, Muni recognized the potential problems with the Embarcadero Station layout. To investigate these problems, the City engaged consultants in 1978 to study possible layouts for an underground turnaround east of Embarcadero Station. A Design Report including a Geotechnical Report and Preliminary Draft EIS was issued in September 1978. Two basic types of terminal layouts were considered east of The Embarcadero Station: a) A multi-track stub with crossovers and b) a loop track. Eight alignment alternatives were reviewed and a loop alternative was recommended for further study. This study was based on a set of assumed operating requirements for headways, storage, and maintenance which were yet to be confirmed by actual operations. In addition, the study recognized possible future extensions both north and south, and identified an order of magnitude of movement to the existing BART tunnels due to cut and cover construction. In 1979 the City decided to incorporate the results of this study into the I-280 Transfer Project which reviewed all transportation improvements along The Embarcadero Corridor. The I-280 Transfer Concept Program Alternative IV-A issued in July, 1983, incorporated the recommended loop turnback from the 1979 study.

Actual operation of the Muni Metro since 1979 has confirmed the need for additional turnaround facilities at Embarcadero Station. Therefore, the City awarded a Consultant Contract in September, 1985, to continue the design and environmental efforts for a Muni Metro Turnaround. The consultant team is led by Bechtel and consists of Dames & Moore, T.Y. Lin, WPE & Associates, Earth Metrics, E.M. Rose & Associates, T. Hughes and Associates, M. Padron, and G. Beetle. Phase I of the Contract includes operations analysis, preliminary engineering, and preparation of an Environmental Impact Statement. Phase II of the project will be final engineering design. Phase III will be construction of the facilities.

SECTION 4 - PROJECT OBJECTIVES

The existing stub and track arrangement at the San Francisco Municipal Railway Metro level of The Embarcadero Station constrains the Metro from meeting its required future headways during peak hours (see No Action Alternative for existing track layout). The Muni Metro Turnaround Project is designed to extend the tracks east of the station in order to provide a more efficient turnaround arrangement. This will allow Muni to:

- Provide additional capacity to accommodate the growth in ridership on the existing Metro System as forecast by the City in the year 2007.
- Provide the opportunity to reduce coupling of trains at West Portal and Duboce Portal, thus reducing passenger delays and operating expenses.
- Improve operating reliability by nominal cost changes to the vehicles and signal system, as described in the Transportation System Management (TSM) alternative.
- Provide side tracks to turnback a significant portion of the trains off the mainline tracks, thus allowing for a future Metro extension to the south.

SECTION 5 - SELECTION OF ALTERNATIVE ALIGNMENTS

Previous Scoping of March 5, 1986

A task force of City and Consultant staff identified and evaluated a wide range of alternative track layouts based on preliminary city requirements for an underground facility to

turn back the trains plus additional facilities to store ready and disabled trains, to bypass trains, to perform minor repairs to the vehicles, and to store maintenance of fixed facilities vehicles and equipment. Four underground alternatives were submitted for the scoping process on March 5, 1986. These alternatives included one stub and three loop alignments, and included tunneling and cut and cover construction methods in the sensitive Market Street section directly over the existing BART tunnels.

Operations Studies

Subsequent to the March 5, 1986 scoping meeting, studies were conducted to determine the economic justification for the preliminary city requirements and to determine the operating feasibility of various track layouts.

These studies concluded that:

1. Additional underground facilities for storage and maintenance cannot be economically justified when compared with moving the vehicles to Metro Center.

2. It is feasible to locate a stub turnaround operation on the surface in the median of the proposed realigned Embarcadero Parkway.

3. Both the loop and stub are feasible track layouts.

As a result of these findings, the previous four underground alternatives were set aside, and a new set of simplified alternatives were investigated to meet the City's objectives.

Current Scoping

As a result of the above studies, completely new and simplified alternatives have been developed. Of these, two "build" alternatives have been selected for this scoping process. They represent a range in environmental impacts, operating expenses, and capital costs. The Embarcadero surface alignment consists of a tunnel section to minimize the construction impacts on the streets and plaza above and BART tunnels below, a cut and cover construction section to bring the main tracks to the surface as quickly as possible to minimize capital costs, and a two-track stub turnback on the surface in The Embarcadero median. This is the minimum capital cost alternative that meets all of the City's operating requirements.

A second "build" alternative, The Embarcadero underground alignment, was developed to locate the turnback operation underground and to bring the mainline tracks to the surface in the median of The Embarcadero. This alternative will require additional capital cost for the larger underground facility to achieve a completely grade separated turnback operation.

SECTION 6 - ALTERNATIVES FOR CONSIDERATION

Alternative 1 - No Action Alternative

This alternative is based on no new Muni facilities nor changes to the Metro operation.

The existing Muni Metro Market Street subway line ends at the east end of the Embarcadero Station. BART, which is located below the Muni level, continues easterly under the Bay to Oakland and other East Bay cities.

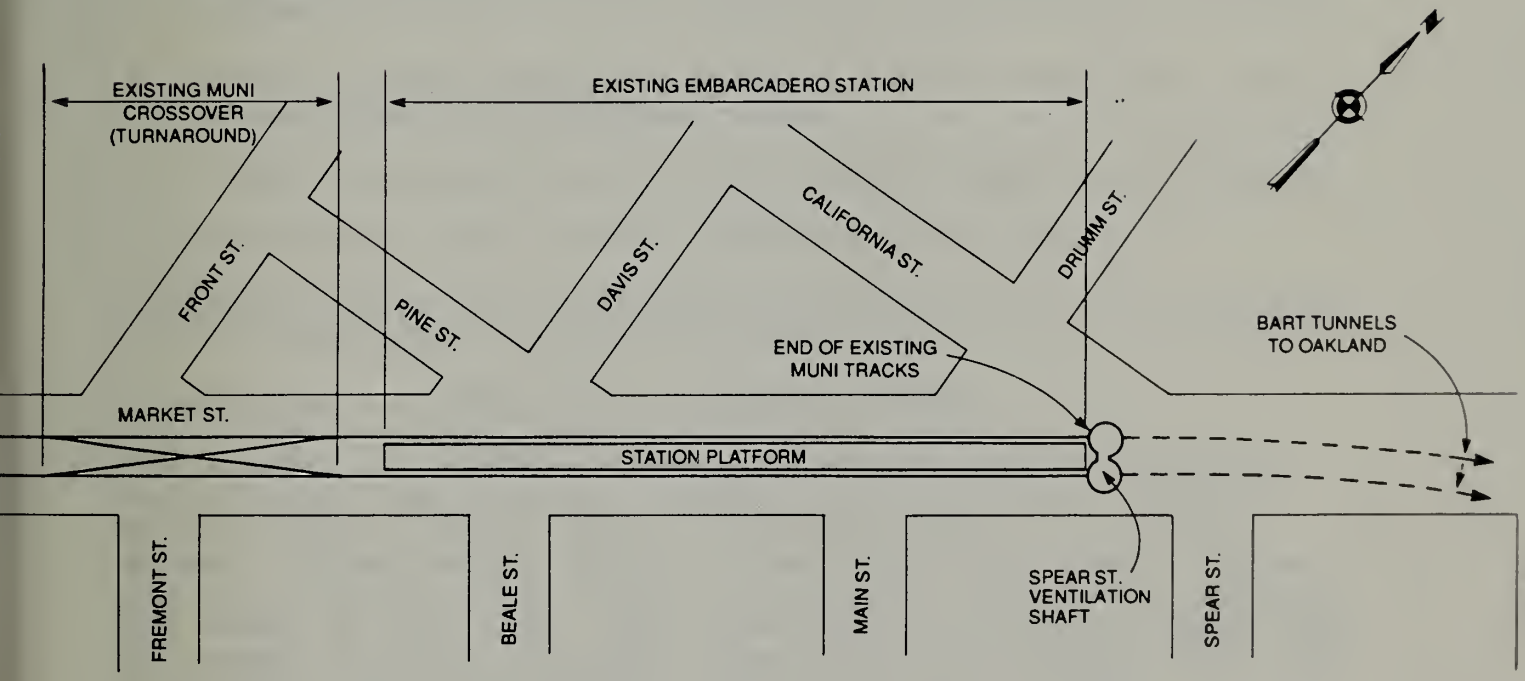
The present track layout is a two track stub with a #10 scissors crossover located immediately west of the station to reverse direction of the trains. The crossover is signalled for 27 mph, although eastbound trains must immediately slow to 10 mph to enter the station. Space is provided on the easterly end of each main track to store 3 vehicles.

Eastbound trains are automatically routed to the next available track by the signal system. Westbound trains are dispatched manually from a local control console. Trains are held a minimal time for schedule. The supervisor can assume local control of the interlocking at any time to re-route trains, cut out a disabled car or any other reason.

The existing time to reverse a train is about 140 seconds which is primarily due to the variability in each operator having to separately change ends in each car before the train can depart.

Current schedules during peak hours require the operation of 20 trains per hour per direction at this terminal. This may increase to 25 trains per hour depending on variations in the amount of coupling at Duboce Portal. 25 trains per hour per direction can be operated if there are no malfunctions of vehicles or control, and represents the maximum capacity of the current layout, equipment, and operating methods.

Future schedules for the year 2007 will require a maximum of 30 trains per peak hour per demand which is beyond the capacity of the present track layout with the current vehicles, signal system, and operating methods.



ALTERNATIVE 1
NO-ACTION

Alternative 2 - Transportation Systems Management

"The Transportation System Management (TSM) alternative is a low cost approach to addressing transportation problems in the corridor. It also provides a baseline against which all of the major investment alternatives are measured. The TSM alternative represents the best that can be done for mobility with existing infrastructure -- that is, without construction of a new transit guideway. Generally, the TSM alternative emphasizes upgrades in transit service through operational and small physical improvements."*

The TSM alternative would include the following modifications to the existing train control system and to the light rail vehicles (LRV) to increase speed and reliability, and to reduce the time to reverse the trains:

1. Modify the service brake circuit to compensate for profile grades.

2. Train-line the reversing function for all cars in a train set to speed up turnaround time.

3. Revise the speed profiles to increase speed at 23 locations.

4. Add one new speed code to increase overall speed.

The track layout and operating plan as described in Alternative 1 will also apply to this TSM alternative.

Alternative 3 - Embarcadero Surface Alignment

The Embarcadero surface alternative would begin at the Spear Street shaft and proceeds northeast in twin tunnels beneath Market Street, generally over the BART Tunnels, to Steuart Street. These tunnels curve to the right under Justin Herman Plaza to a ventilation structure under The Embarcadero roadway and clear of the Plaza. The main tracks continue southeasterly in subway open cut structure, then curve to the right under The Embarcadero elevated freeway near the Mission Street intersection. Between Mission and Howard Streets, the tracks would ascend to a surface alignment in the median of The Embarcadero roadway at Howard Street. The surface tracks would continue southeast in The Embarcadero median through reverse curves to the north line of Folsom Street. A center track for turning a four-car train would be provided in this block. The tracks continue in The Embarcadero median across Folsom Street, Harrison Street, and to the north side of realigned Bryant Street. In the last block the main tracks spread to accommodate a #5 Crossover Complex and two center tracks.

*(Section 2.4 (b) of UMTA's draft "Procedures and Technical Methods for Transit Protect Planning" dated September 1986)

The Embarcadero median with Muni tracks is proposed to be closed to cross traffic at Howard and Harrison streets. At Folsom Street, eastbound traffic can turn left onto the northbound lanes of The Embarcadero.

The mainline tracks would be spaced to accommodate a future center platform station between Folsom and Harrison streets. A future metro southern extension would connect with the turnaround tracks at the north side of realigned Bryant Street.

Operationally, the existing automatic train control system would be extended through the new subway to the new portal near Howard Street. All trains would be manually operated on the surface with train separation controlled by wayside signals. All track switches would be power operated and remotely controlled by a local supervisor and/or central control. The center track near Folsom and the two middle tracks near Bryant Street would be signalled to turn back trains in regular service. The existing layout at Embarcadero Station would be signalled to turnback trains under non-regular conditions.

The proposed year 2007 operating plan for this alternative is described by Metro Line in the following paragraphs. This plan is based on the current vehicles, signal system, and operating rules. Projected ridership increases would require the operation of 30 trains per peak hour per direction in the subway.

J-Line: Two-car trains would operate at 10 minute peak headway from the westerly neighborhoods to Duboce Portal without coupling to other lines, continue in the Market Street subway to Embarcadero Station, then turn back at the center track between Harrison and Folsom Streets.

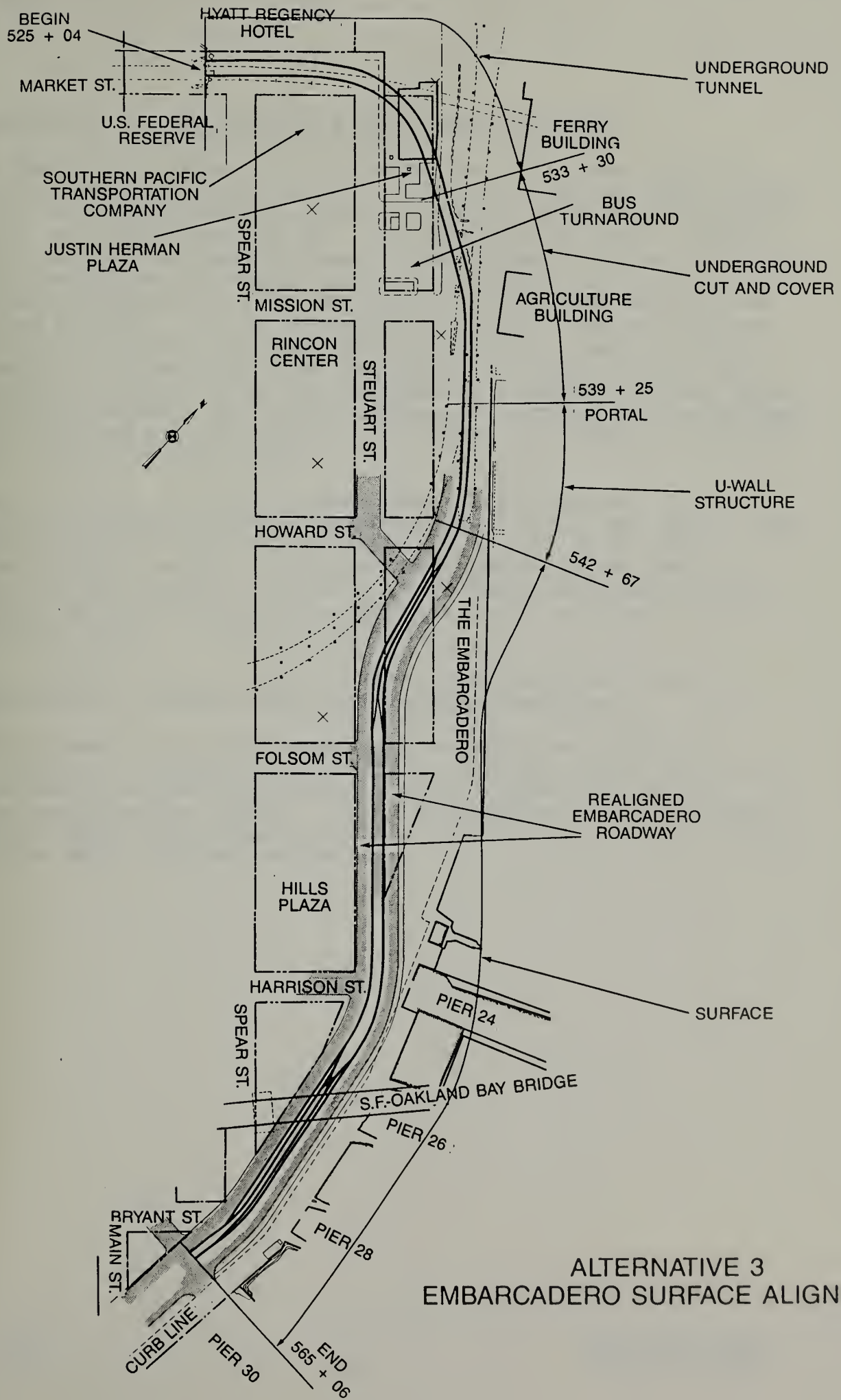
K, L, M-Lines: Two-car trains would operate at peak headways of 5 minutes (L) and 10 minutes (K, M) in the westerly neighborhoods, then couple at West Portal into four-car trains at peak headways of 5 minutes. These four-car trains would operate through the Market Street subway, continue on to the proposed Folsom Street station, and would then turned back on one of the middle tracks between Harrison and Bryant Streets.

N-Line: Two-car trains would operate at 5 minute peak headway from the westerly neighborhoods to the Duboce Portal without coupling to other lines, continue through the Market Street subway and the proposed Folsom Street station. This line

could then continue on the surface to all stations on the future Metro southern extension, and would be turned back at the extension terminal.

The number of trains per peak hour are summarized below:

	Embarcadero Station		Folsom Station		Extension Terminal	
Lines	Hdwy	Trains/Hr	Hdwy	Trains/Hr	Hdwy	Trains/Hr
J	10	6	0	0	0	0
K,L,M	5	12	5	12	0	0
N	5	12	5	12	5	12
Total		30		24		12



ALTERNATIVE 3
EMBARCADERO SURFACE ALIGNMENT

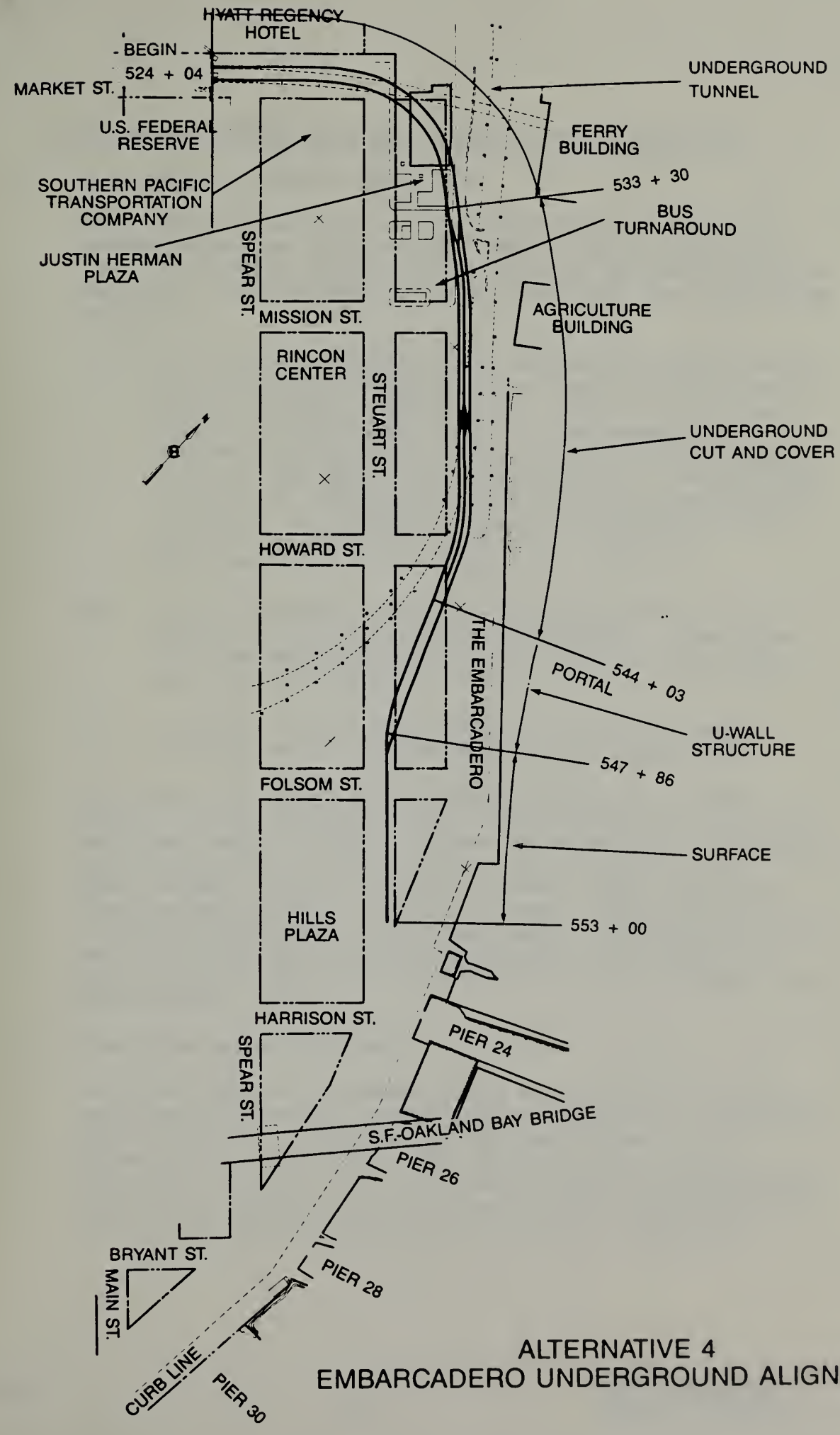
Alternative 4 - Embarcadero Underground Alignment

The Embarcadero Underground alternative would have a tunnel section similar to Alternative 3 from the existing Spear Street shaft to a ventilation structure under the Embarcadero roadway clear of Justin Herman Plaza. The main tracks would continue southeasterly in a subway open cut structure then curve to the right under The Embarcadero elevated freeway and close to the westerly property line of the Embarcadero between Mission and Howard Streets. The main tracks spread for a center turnback track with access from both ends followed by a second center track with access only from the north. The main tracks then ascend to the median of the realigned Embarcadero Parkway south of Folsom Street. One main track would continue on the surface across Folsom Street and 330 feet beyond for temporary storage of a 4-car disabled train.

Operationally, the existing automatic train control system would be extended through the new subway to the new portal near Folsom Street. Surface operation on the tail track would be under manual control. All track switches would be power operated and remotely controlled by a local supervisor and/or central control. Both center pockets would be signalled to turnback trains in regular service.

As in Alternative 3, existing Embarcadero Station would be signalled to turnback under non-regular conditions.

The proposed year 2007 operating plan would be similar to Alternative 3 except all J trains (6 per peak hour) and all K, L, M trains (12 per peak hour) would be turned on the two underground pocket tracks. As in Alternative 3, all N trains (12 per peak hour) could serve the future Folsom Street station and the Metro southern extension.



ALTERNATIVE 4
EMBARCADERO UNDERGROUND ALIGNMENT

SECTION 7 - OTHER PROPOSED TRANSPORTATION PROJECTS

- Muni Metro Southern Extension

  This project will extend the Muni Metro light rail system from the proposed Muni Metro Turnaround south to a terminus in China Basin near the proposed Mission Bay area. The proposed project includes the following elements:

  (1) An at-grade, double-track exclusive transitway to the Southern Pacific Railroad Depot (China Basin) within the Mission Bay area, along an alignment generally following King, the Embarcadero roadway, and Steuart Street, to a subway portal south of the Muni Metro Turnaround. The specific location of the portal will be determined by the alignment of the Muni Metro Turnaround project and by the extension alignment along the Embarcadero.

  (2) A new intermodal station at the SP depot permitting cross-platform transfers. A minimum of three additional at-grade stations with side platforms enroute.

  (3) A junction with the proposed F-line in the vicinity of Folsom Street and the Embarcadero.

  The Metro Extension will provide improved, direct transit service between the City's neighborhoods and downtown area, and three areas of substantial proposed new development: Rincon Hill; South Beach; and Mission Bay. Direct service between BART and these three areas as well as a direct Muni rail connection to the SP Depot will be established. Finally, with the E-Line connection, the Extension will link the entire northeast waterfront area with the Mission Bay development.

- The Embarcadero Parkway

  San Francisco is implementing a $132 million I-280 Interstate Transfer Program under the Federal Highway Act (Title 23), approved by the Department of Transportation in 1983. The Program is designed to provide a variety of transit and highway improvements to address the problems created by the withdrawal of a portion of Interstate Route 280 in San Francisco.

Interstate Route 280 was originally planned to link with the Embarcadero Freeway waterfront route and the Bay Bridge. In 1974 the China Basin segment of the freeway was constructed, but the originally planned 1.4 mile connection to the Embarcadero freeway was not built because of opposition to a waterfront freeway.

In 1973 an amendment to the Federal Highway Act, Title 23, authorized withdrawal of unconstructed segments of the Interstate system and substitution of these segments for other highway or transit projects. This amendment is the basis for developing the I-280 Transfer Concept Program.

The Embarcadero Parkway is the result of continuing study by various City departments of the seven projects which evolved from the I-280 Transfer Concept.

The project involves:

(1) Reconstruction and beautification of the roadway along the Embarcadero between North Point and Second Streets. The new Parkway will contain four lanes of traffic with left turn lanes at various street intersections. The Municipal Railway will operate in a street right-of-way.

(2) Construction of a boulevard along the present alignment of King Street to connect the Embarcadero to the I-280 terminus near Sixth Street. The new boulevard will provide six lanes of traffic and Muni Metro operation in the median.

(3) Modification of the existing I-280 stub end and ramps in the vicinity of Fourth and Berry Streets and the construction of new ramps to connect with the new King Boulevard.

o Muni F-Line Extension

The proposed F-Embarcadero streetcar line involves the construction of track and power distribution facilities for an at-grade double track streetcar line running in the median of the Embarcadero Roadway. The streetcar line would provide service between Fishermen's Wharf (perhaps Fort Mason in the Golden Gate National Recreation Area) and the existing F-Line service on Market Street. A loop terminal could be constructed west of the Fort Mason tunnel that could provide service to the neighboring Marina District.

The project includes a rail connection in a vicinity of the Ferry Building with the existing F-Market Streetcar Line and a rail connection in the vicinity of the Folsom-Embarcadero intersection with the proposed Muni Metro Extension. Several alignments and locations for these connections have been studied as part of the preliminary engineering associated with preparation of the I-280 EIR.

The E-Line is proposed to be operated with a fleet of 15 PCC streetcars similar to the F Market Line.

SECTION 8 - PRELIMINARY SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS

The following list of potential environmental impacts resulting from the build alternatives will be evaluated in the Draft EIS along with other required evaluations. These issues will be analyzed as well as others identified during the scoping process.

- Noise/vibration and dust impacts during construction
- Disruption of motor vehicle and pedestrian access during construction and need for temporary rerouting of traffic
- Potential for movement of BART tunnels during construction and the potential for settling of adjacent buildings
- Potential disturbance of buried archaeological resources that may be in the area
- Possible impacts to City plans and policies including the Redevelopment Plan
- Potential impacts to proposed new waterfront parkland along the Embarcadero (surface alternative)
- Possible displacement of existing buildings within the proposed alignment (surface alternative)
- Change to motor vehicle and pedestrian circulation patterns due to MUNI operations (surface alternative)
- Possible noise increase due to MUNI operations along Embarcadero (surface alternative)
- Potential impacts to Embarcadero freeway structures

Several other transportation projects are planned within, or adjacent to, the project area. While the proposed MUNI Metro extension to the CALTRAIN Station at Fourth and Townsend Streets is considered a secondary impact, other related projects such as the Embarcadero Parkway Project from King Street to North Point Street, the proposed MUNI F-Line extension northward to Fisherman's Wharf, and construction of new on and off ramps to the I-280 freeway, while not dependent on the turnaround project will be implemented within the same time frame and therefore the cumulative effects of these projects will be addressed.